

CLAIMS

The claims defining the invention are as follows:

1. A separator for separating particles entrained in a fluid, said separator including:
 - 5 a sleeve adapted to be mounted over a rotatable shaft for forming a cavity therebetween;
 - an inlet to the cavity;
 - an outlet to the cavity opposite the inlet; and
 - means for imparting a centrifugal force on fluid within the cavity, said means operatively connected to the shaft so that, in use, spinning of the shaft creates the centrifugal force,
 - 10 wherein, in use, a slurry of fluid and particles enters the cavity through the inlet, the particles are caused to separate from the fluid by action of the centrifugal force, the separated particles and fluid leave the cavity via the outlet with the particles tending to be closer to the sleeve than the shaft.
2. A separator according to claim 1, wherein the cavity increases in cross-sectional area along its length from the inlet towards the outlet.
- 20 3. A separator according to claim 1, wherein the sleeve is frustoconical in shape with the narrow end of the cone at the inlet and a wide end at the outlet, whereby the size of the cavity increases along its length from the inlet to the outlet.
4. A separator according to claim 1, wherein said means is in the form of one or more paddles projecting from the shaft into the cavity.
- 25 5. A separator according to claim 1, wherein the inlet is of a smaller area than the outlet.
- 30 6. A separator according to claim 1, where in the cavity is of a helical shape.
7. A separator according to claim 6, wherein said helical shape of the cavity acts as

said means for imparting centrifugal force.

8. A separator according to claim 1, wherein the outlet includes a chamber at the end outlet of the cavity between the sleeve and the shaft, the chamber arranged to receive a parting means for portioning an inner layer of fluid substantially devoid of the particles from an outer layer of fluid carrying the particles.
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9. A separator according to claim 1, wherein said outlet includes a parting means arranged to portion an inner layer of fluid substantially devoid of the particles from an outer layer of the fluid carrying the particles.
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10. A separator according to claim 9, wherein the parting means is in the form of a blade closely encircling the shaft.
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11. A separator according to claim 9, wherein the sleeve is arranged to rotate about its axis relative to the parting means.
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12. A separator according to claim 9, wherein the outer layer is ejected from a first exit of the outlet.
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13. A separator according to claim 12, wherein the first exit includes a turbulence means for slowing the exit of fluid carrying particles from the first exit.
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14. A separator according to claim 9, wherein the parting means includes a scoop for scooping the inner layer of fluid away from an edge of the blade to a second exit of the outlet.
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15. A separator according to claim 14, wherein the scoop is in the form of a plurality of channels in the parting means.
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16. A separator according to claim 6, wherein a first raceway is provided between the inlet and the helical cavity.

17. A separator according to claim 15, wherein a second raceway is provided between the channels in the parting means and the second exit.

5 18. A separator and parting means combination, the separator as defined in claim 1, wherein the parting means parts an inner layer of fluid substantially devoid of particles from an outer layer of fluid carrying particles.

10 19. A separator and bearing combination, the separator as defined in claim 1, the bearing arranged to receive fluid substantially devoid of particles from close to the shaft from the outlet of the separator.

15 20. A separator, parting means and a bearing combination, the separator and parting means as defined in claim 18, the bearing arranged to receive the inner layer of fluid from the parting means.

21. A separator, parting means and a bearing combination according to claim 19, wherein the bearing is provided with a sieve means on an opposite side of the bearing to the separator.